A critical appraisal of "A Multicenter Randomized Double-Blind Study: Comparison of the Epley, Semont, and Sham Maneuvers for the Treatment of Posterior Canal Benign Paroxysmal Positional Vertigo"

By

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Abstract

This paper is a critical appraisal of an article that compares the efficacy of 3 maneuvers in decreasing symptoms of Benign Paroxysmal Positional Vertigo (BPPV). I found this article using the Texas Tech Library Portal. The article contained both strengths and weaknesses in the sections of introduction, method, results, and discussion. Some strengths include the introduction providing a good explanation and delivering background information on what exactly BPPV is and ways to provoke symptoms. Another strength is the intervention of the experiment is easily replicable by some other individuals in the future, and the authors do a fantastic job of analyzing and explaining the results of the experiment. The article does not have many weaknesses, but those that are evident and apparent cannot be overlooked. The authors do not explain the process of how the assessors recorded the effects of the treatment, what tool was used, nor the procedure of data collection. In addition, the location of where the study took place was never mentioned. These things ultimately make the experiment irreplicable by other others in an additional experiment. In the end the weaknesses addressed in my paper generated too much skepticism and lead me to draw the conclusion that this is not a reliable source.

Key words

Epley Maneuver, Semont Maneuver, Sham Maneuver, Efficacy, Benign Proximal Vertigo

Introduction

Benign paroxysmal positional vertigo (BPPV) is a condition within the inner ear in which symptoms of vertigo and nystagmus cause a person to feel nauseous and unbalanced. While there has been recent research proving multiple procedures, like the Epley, Semont, and Shams, maneuvers to be effective in reducing symptoms of BPPV, there has not been any research conducted when comparing the maneuvers to one another. The authors of this article wanted to compare the efficacy of three various maneuvers in order to see which was best able to decrease symptoms over a short period of time. The Epley maneuver is notorious for being most effective in a clinical setting, so this specific article answers the clinical question of whether the Epley maneuver is the most effective treatment when trying to minimize the symptoms of patients suffering with benign paroxysmal positional vertigo (BPPV) when compared to alternative methods like Gans or Semont maneuver.

Methods

This literature search began with the use of the Texas Tech University Library Portal. To find this article the keywords “vertigo” and “Epley Maneuver” were used. Three limitations were placed on this search which included full text publications, experimental study, and articles. Placing the full text publication limitation ensured there would be access to the full article. The experimental study limitation confirmed that the article would include an authentic conducted experiment that contained real-life subjects with adjustable variables. The article limitation ensured the articles had been published in journals, peer-reviewed, and therefore held some reliability. Inclusions for choosing this article included the desired population of interest, patients suffering with BPVV, intervention method which is the Epley Maneuver, and comparison of the

effects of this method to that of an alternative method. These inclusions ensured that the clinical question would be answered. The search results produced five viable articles that then had to be reviewed.

The article chosen was published in the journal "Audiology and Neurotlology" in 2014 by authors Jong Dae Lee, Dae Bo Shim, Hong Ju Park, Chan II Song, Min-Beom Kim, Chang-Hee Kim, Jae Yung Byun, Sung Kwan Hong, Tae Su Kim, Kye Hoon Park, Jae-Hyun Seo, Byoung Soo Shim, Joon Han Lee, Hyun Woo Lim and Eun-Ju Jeon. This article was chosen among other because it appeared to be the most reliable and credible. It fully answered the clinical question of interest, and included a randomized double-blind study. The experiment arrangement avoided bias and recorded data at time intervals that were perfect for the outcome measure of "short-term efficacy".

Results

Summary of the study

The article begins by explaining what Benign Proximal Positional Vertigo (BPPV) is and that it can be reproduced by using the "Dix-Hallpike" maneuver. The article then explains they will be the first to create an experiment that compares the Epley Maneuver to two other commonly used maneuvers. This study involved 99 subjects who were diagnosed with BPPV. To be selected the subjects needed to have specific inclusions and exclusions. The study was designed to be double-blind and random, therefore the subjects were split into three groups and given the treatment (one of the three maneuvers) based on randomly assigned computer-generated codes. This study was interested in the short-term efficacy of the maneuvers, so the response to treatment was recorded after twenty minutes of first treatment, then twenty minutes,

one day, and one week after second treatment. The results were examined using SPSS software and Chi-squared tests. Twenty minutes after the first maneuver, one day, and one week after second maneuver the Epley group had the highest resolution rate of nystagmus. The only time Semont maneuver yielded better results than Epley was twenty minutes after the second treatment. The Epley maneuver had subjects report nystagmus reoccurrence after one week, but Semont and Sham maneuver did. Based on these results, the Epley maneuver was significantly more effective in decreasing symptoms of BPPV than the Semont and Sham maneuvers.

Appraisal of the study introduction

The Introduction does a good job of explaining and providing background information on what exactly BPPV is, ways to provoke symptoms, and two of the procedures that will be compared. The authors reference four different sources in the introduction, which establishes credibility.

I think they should have provided more information on the third maneuver, "the sham", because they only address it by name at the very end of the paragraph without any real explanation. They could have gone more in depth on all three maneuvers. I also think the authors should have explained exactly how these maneuvers work to diminish symptoms of BPPV. The critical variables are addressed in the introduction, but the method of the study was not. This should be added so that the readers know what to expect.

Appraisal of the study methods

The intervention was described very clearly and thoroughly enough that it can be replicated easily by some other individuals in the future. They describe the starting position, degrees and speed to turn patient's head, how long to hold this position, and ending position of patient. The experiment was set up in a way that truly avoided any type of bias that could

potentially occur. The data was analyzed with analysis of variance using a Chi-square test in SPSS software, with the p-value of <.05 considered statistically significant. This is the correct analysis to compare the three group's outcomes.

One weakness is that the outcome measures are not described in sufficient detail. The study does not explain the process of how the assessors recorded the effects of the treatment, just whether nystagmus and/or vertigo were "present". The reliability and validity of tool was not supported by other evidence since we do not know the specific tool used. Also, the procedure of data collection is not present, clear, or in detail. We do not know exactly how the assessors collected data; therefore, it can't be replicated easily. The only information provided by the article is that the assessors recorded whether symptoms of vertigo or nystagmus were present in each patient, but does not explain how. The location of where the study took place was never mentioned.

Appraisal of the study results

The results section is written in a clear and organized manner. The authors proceed to explain the results by explaining which maneuver had the highest resolution after each recorded time point following treatment. The results section goes in order chronologically, so this segment makes sense and flows well. The article does a great job of comparing the three maneuvers to one another, and clearly states which one had the highest resolution rate. The authors also assess recurrence rate of symptoms. The authors report all of the outcome measures presented in the methods. They use the analysis of these outcomes to draw conclusions and results that are clearly stated. The figures and tables are presented clearly, accurately, and make sense. They provide all necessary information for the reader to see how they drew their conclusions, and look at the

exact numbers. The bar graph is a great visual to compare all three maneuvers to one another at each time interval.

A weakness would be that the results section does not address/restate the research question directly, but thoroughly answers the research question that was stated in previous sections.

Appraisal of the study discussion

A strength of the discussion section is that the authors do propose some ideas on what could be potentially happening to the otolith debris, and how the movement of these will affect the reported results of the patient. Another strength would be that the authors tie in the findings from the study into the existing literature. The article cites various source's findings and compares them to the results of this study. They all coincide and there were no discrepancies between the results of this study and previous studies. The limitations are recognized and mentioned in this section, which is something that is important to address. The conclusions are reflective of the results, and the authors did not over conclude their findings. They merely stated exactly what they found from their study, and did not try and draw unrealistic conclusions.

The article does not really indicate the "meaning" of the findings. This could be further elaborated to ensure the reader fully understands the outcome. The authors did not address clinical significance or application of the study. They just repeated and explained their findings/results. By addressing the clinical significance, it would show that the authors looked at the big picture of the experiment, and how it may affect the healthcare world.

Discussion

The clinical significance of this study is important to current PT practice because it compares the positive effects of three different maneuvers that are commonly used by clinicians.

The study looked at the decrease in symptoms over the span of one week, which is typically how often a patient returns to the clinic for treatment, therefore it is very practical. Physical Therapy patients can use this information when choosing their clinician by asking which method they use to treat BPPV. This study answers my clinical question by proving that the Epley method is the most effective method of reducing symptoms of BPPV by comparing it to alternative methods.

From this article it is safe to conclude that the intervention of this study, the Epley Maneuver, should be used in the clinical setting. The potential benefits of using this maneuver, compared to alternative maneuvers, is a more significant decrease of symptoms of BPPV and for a longer duration of time. Potential risks of the Epley maneuver include increased ataxia, nausea, nystagmus. Although these are potential risks of Epley Maneuver, they are not different than the risks of using any of the other maneuvers. A study comparing the efficacy of the Epley maneuver to additional maneuvers or treatments could improve the argument for using it as primary treatment in the clinic. In addition, a study comparing long-term benefits of Epley maneuver could be very advantageous.

Epley maneuver is renowned for being the best treatment of BPPV, and this study just solidified that idea. Due to the conclusions of this study, and the knowledge I already have I would be confident enough to use this maneuver on one of my patients. I could anticipate myself using this as treatment in a clinical setting once I receive the proper training of the maneuver because it has been proven to be one of the most effective with limited amounts of negative side effects. If my only knowledge of treatment of BPPV had been from this literature alone I do not think it would have given me enough confidence to use it on my patients due to the lack critical information in the methods section.

This article does a great job of providing a background of BPPV, avoiding bias, citing various sources, and conducting a good experiment. The conclusions that were drawn go in tandem with additional research. What the article is lacking is crucial in replicating the study and establishing credibility, so for that reason I would not consider this a very reliable article.